

DOOR FOR REFRIGERATOR AND
METHOD OF PRODUCING THE DOOR FOR REFRIGERATOR

BACKGROUND OF THE INVENTION

5

1. Field of the Invention

The present invention relates to a door for refrigerator and a method for producing the door for refrigerator.

10 2. Description of the Related Art

Fig. 7 is a perspective view illustrating a conventional door for refrigerator. Referring to the figure, a door 1 is composed of a door panel 3, an inner panel 2, a door cap 4 which is fitting into the upper portions of the door panel 3 and the inner panel 2, and a handle 5 which is fitting into the bottom portions of the door panel 3 and the inner panel 2. Inside the housing of the door 1, a heat insulating foam material is provided.

20 The door panel 3 is normally painted in a single color. The door 1 is also provided with a sheet metal part which is put between the door panel 3 and the heat insulating foam material. The sheet metal is supposed to keep the door panel 3 from getting uneven on the surface by a thermal shrinkage effect of the heat insulating foam material. The sheet metal part serves both for detaching the door panel 3 from the heat insulating foam material

and for reinforcing the door panel 3.

As the conventional door for refrigerator is thus constructed, the door panel 3 would not look attractive in design if the door panel 3 has an uneven surface caused by
5 the thermal shrinkage effect of the heat insulating foam material. For that reason, the sheet metal part is to be added both for detaching the door panel 3 from the heat insulating foam material and for reinforcing the door panel 3 so that the door panel 3 may not be stretched to
10 cause the uneven surface by the thermal shrinkage of the heat insulating form material. Consequently, this leads to an extra production cost.

There is another problem of the conventional door for refrigerator in respect of the design of the front view of the door 1. The door 1 has such separate parts of injection as the door cap 4 and the handle 5 fitting into the door panel 3 in the upper portion and in the bottom portion, respectively. For that reason, there would be no problem to have some color pattern in the horizontal direction in the front view of the door 1 if the door cap 4 and the handle 5 are painted in a different color from
15 that of the door panel 3. Having such color patterns in the vertical direction in the front view of the door 1, however, requires extra separate parts to be added on both
20 sides of the door panel 3 because the door panel 3 is
25

TOKYO SHIBA 3-chome 60

painted in a single color. Consequently, this also leads to an extra production cost.

SUMMARY OF THE INVENTION

5

One of the objects of the present invention is to provide a door for refrigerator which is sophisticated in design and also cuts production cost and a method of producing the door for refrigerator.

10

This and other objects of the embodiments of the present invention are accomplished by the present invention as hereinafter described in further detail.

15

According to one aspect of the present invention, a door for refrigerator is composed of a door panel made of metal, an inner panel combined with the door panel, a door cap fitting into the door panel and the inner panel in an upper portion, and a handle fitting into the door panel and the inner panel in a bottom portion. Furthermore, the door for refrigerator has a heat insulating foam material injected inside. Then, the door for refrigerator includes draw forming provided at a position near to an edge of at least either side of the door panel.

25 Subj According to another aspect of the present invention,

cont.

A'

a door for refrigerator is composed of a door panel made of metal, an inner panel combined with the door panel, a door cap fitting into the door panel and the inner panel in an upper portion, and a handle fitting into the door panel and the inner panel in a bottom portion. Furthermore, the door for refrigerator has a heat insulating foam material injected inside. Then, the door for refrigerator includes draw forming provided a given position of the door panel. The door panel may have a two-tone color, and the draw forming may be provided on a boundary of colors.

According to another aspect of the present invention, a method of producing a door for refrigerator, which is composed of a door panel made of metal, an inner panel combined with the door panel, a door cap fitting into the door panel and the inner panel in an upper portion, and a handle fitting into the door panel and the inner panel in a bottom portion, the door for refrigerator having a heat insulating foam material injected inside, includes the step of providing draw forming at a position near to an edge of at least either side of the door panel.

According to another aspect of the present invention, a method of producing a door for refrigerator, which is composed of a door panel made of metal, an inner panel combined with the door panel, a door cap fitting into the door panel and the inner panel in an upper portion, and a

DISCLOSED IN DOCUMENT

handle fitting into the door panel and the inner panel in
a bottom portion, the door for refrigerator having a heat
insulating foam material injected inside, includes the
steps of providing draw forming at a given position of the
door panel, coloring the door panel in two-tone color, and
providing the draw forming on a boundary of colors.

Further scope of applicability of the present
invention will become apparent from the detailed
description given hereinafter. However, it should be
understood that the detailed description and specific
examples, while indicating preferred embodiments of the
invention, are given by way of illustration only, since
various changes and modifications within the spirit and
scope of the invention will become apparent to those
skilled in the art from this detailed description.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will become more fully
understood from the detailed description given hereinafter
and the accompanying drawings which are given by way of
illustration only, and thus are not limitative of the
present invention, and wherein:

Fig. 1 shows a front view of a door for refrigerator

according to a first embodiment of the present invention;

Fig. 2 is a Z-Z sectional view of the door for
refrigerator of Fig. 1;

Fig. 3 is a graph illustrating a curve based on a
5 draw forming position on each side of the door panel and a
maximum amount of displacement corresponding to the draw
forming position according to the first embodiment;

Fig. 4 is a graph illustrating a curve based on a
draw forming position on each side of the door panel and a
10 maximum amount of displacement corresponding to the draw
forming position according to the first embodiment;

Fig. 5 is a sectional view of a door for
refrigerator according to a second embodiment;

Fig. 6 is a sectional view of a door for
15 refrigerator according to a third embodiment; and

Fig. 7 is a diagram illustrating a conventional door
for refrigerator.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

20

Reference will now be made in detail to the present
preferred embodiments of the invention, examples of which
are illustrated in the accompanying drawings, wherein like
reference numerals indicate like elements through out the
25 several views.